

5.5 Noise

The noise analysis provided in this section is summarized from the *Dos Colinas-Carlsbad, CA Environmental Noise Assessment* prepared by Dudek (July 29, 2010) and *Dos Colinas-Carlsbad, CA Environmental Noise Assessment Addendum* prepared by Dudek (September 3, 2010). These documents are provided as Appendix D on the attached CD of Technical Appendices found on the back cover of this EIR.

5.5.1 Existing Conditions

The standard unit of measurement of noise is the decibel (dB). The decibel measurement is logarithmic; meaning each increase in one decibel is a tenfold increase in the level of noise. A sound level of zero "0" dB is the threshold of human hearing. This level would be barely audible to a human of normal hearing under extreme silent listening conditions. Typically, the quietest environmental conditions (rural areas with extensive shielding) yield sound levels of approximately 20 dB. Normal speech has a sound level of approximately 60 dB. Sound levels above 120 dB roughly correspond to the threshold of pain and would be associated with sources such as jet engine noise or pneumatic equipment. The minimum change in sound level that the human ear can detect is approximately 3 dB. A change in sound level of 10 dB is usually perceived by the average person as a doubling (or halving) of the sounds loudness. A change in sound level of 10 dB actually represents an approximate 90 percent change in the sound intensity, but only about a 50 percent change in the perceived loudness.

Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The method commonly used to quantify environmental sounds consists of determining all of the frequencies of a sound according to a weighting system that reflects the nonlinear response characteristics of the human ear. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (or dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the decibel curve.

Community noise levels are measured in terms of the A-weighted decibel. The City of Carlsbad uses the Community Noise Equivalent Level (CNEL) scale for land use/noise compatibility assessment. The CNEL is a time-weighted noise measurement scale that represents the average noise level over a 24-hour period, and is based on the A-weighted decibel. Time weighting refers to the fact that noise occurring during certain noise-sensitive time periods is given greater significance. In the calculation of CNEL, noise that occurs during the evening time period (7 p.m. to 10 p.m.) is weighted by 5 dB and a 10 dB weighting during the nighttime period (10 p.m. to 7 a. m.).

The City of Carlsbad also uses the Leq scale to measure community noise levels. The Leq scale represents the average energy noise level over a sample period of time. The Leq represents the decibel sound level that would contain the same amount of energy, as a fluctuating sound level over the sample time period.

5.5.1.1 *City of Carlsbad General Plan - Noise Element*

The City of Carlsbad General Plan Noise Element identifies and defines existing and future environmental noise levels from sources of noise within or adjacent to the City of Carlsbad; establishes goals, objectives and policies to address these impacts, and provides action programs to implement these goals, objectives and policies. Goals, objectives and implementing policies and action programs applicable to the proposed project include:

Land Use Goal

- A City where land uses are not significantly impacted by noise.
- A City which controls mobile sources of noise to help assure that mobile noise sources do not substantially contribute to the noise environment.

Land Use Objective

- To achieve noise compatibility between land uses through the land use planning/development review process.
- To actively control mobile noise violations.

Circulation Goal

- To provide a roadway system that does not subject surrounding land uses to significantly adverse noise levels.

Circulation Objective

- To design and manage all roadways to maintain acceptable noise levels.

Airport Goal

- City that achieves long-term compatibility between the airport and surrounding land uses.

Airport Objective

- To minimize impacts on City residents, the City has planned for non-residential land uses within the 65 dBA Noise Contour of McClellan-Palomar Airport.
- To develop and enforce programs dealing with airport noise disclosure, aviation easements and noise control that provide for noise compatibility with surrounding land uses.

5.5.1.2 *City of Carlsbad Noise Guidelines Manual*

The following City of Carlsbad noise standards are applicable to the proposed project. These standards are defined in the *City of Carlsbad Noise Guidelines Manual* (City of Carlsbad, 1995).

A. Exterior and Interior Residential Noise Standards

Sixty (60) dBA CNEL is the acceptable exterior noise level to which residential uses must be mitigated, except for areas impacted by the McClellan-Palomar Airport, which must be mitigated to a 65 dBA CNEL exterior noise level.

According to City standards, interior noise levels for all residential units must be mitigated to a 45 dBA CNEL level when openings to the exterior of the residence are closed. If openings are required to be closed to meet the interior noise standard, then mechanical ventilation shall be provided.

B. Construction Noise Standards

Carlsbad City Ordinance 8.48.010 prohibits construction before 7 a.m. and after sunset, Monday through Friday and between 8 a.m. and sunset on Saturday. No construction is allowed on Sunday or city recognized holidays. No construction noise threshold level (in dBA) has been established by the City of Carlsbad. However, for the purposes of this EIR, a 75-dBA Leq-8h threshold has been applied. This standard is used by both the County and City of San Diego.

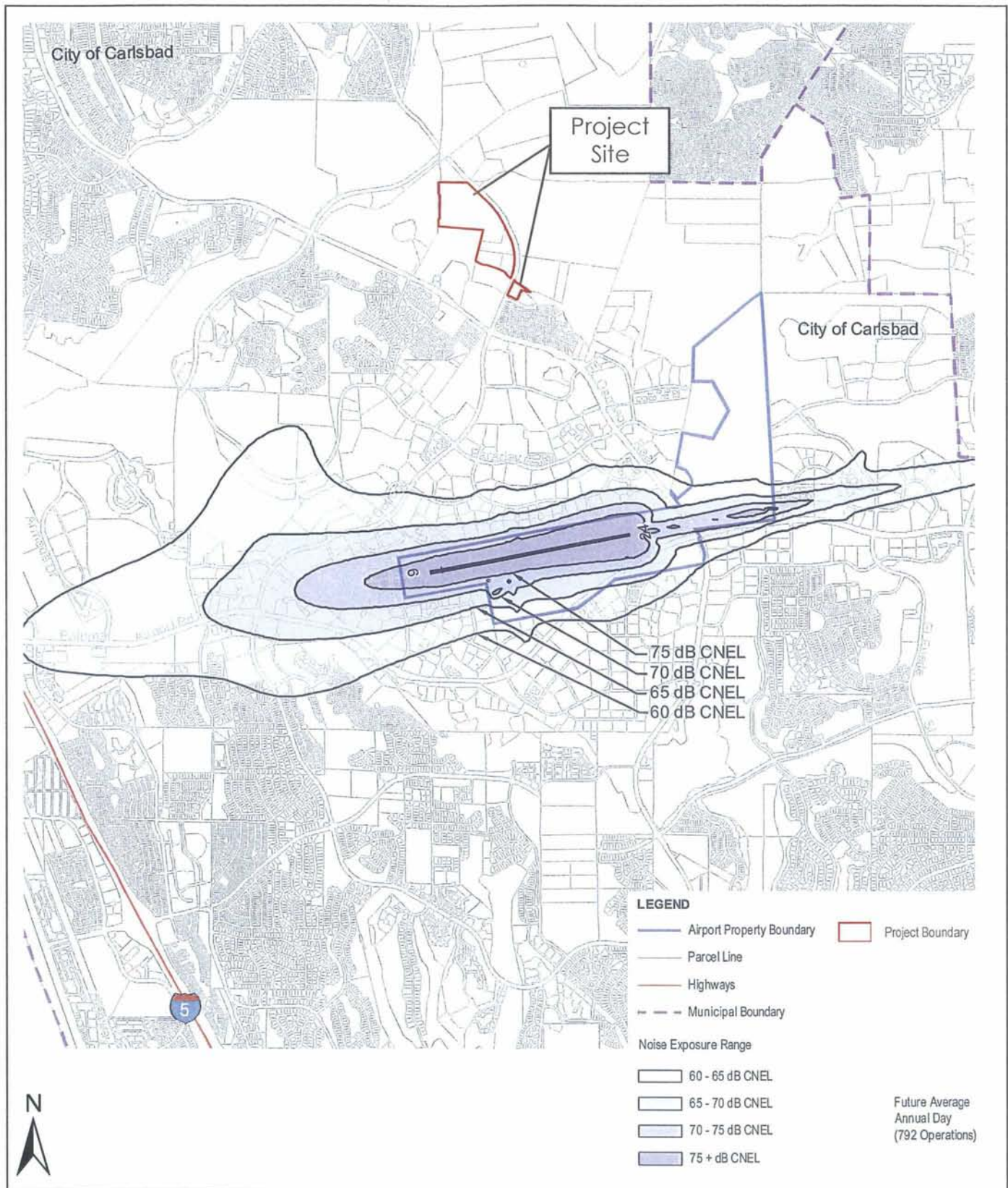
C. State of California Code of Regulations, Title 24 Noise Insulation Standards

The California Code of Regulations (CCR), Title 24, Noise Insulation Standards, states that single- and multi-family dwellings, hotels, and motels located where the CNEL exceeds 60 dBA, must obtain an acoustical analysis showing that the proposed design will limit interior noise to less than 45 dBA CNEL. Worst-case noise levels, either existing or future, must be used for this determination. Future noise levels must be predicted at least ten years from the time of building permit application. The City of Carlsbad has adopted the CCR Title 24 standards.

5.5.1.3 Existing Noise Levels

There are no major noise sources in the immediate vicinity of the site. Background noise includes distant traffic along College Boulevard, Cannon Road, El Camino Real, and nearby private roads as well as occasional distant aircraft noise. The McClellan-Palomar Airport is located approximately 1.5 miles to the southeast of the project site. As depicted on Figure 5.5-1, the project site is not located within the noise contours, as defined in the McClellan-Palomar Airport Land Use Compatibility Plan (ALUCP). However, as Figure 5.5-2 depicts, the site is located within the Airport Overflight Notification Area and may be subject to some of the annoyances or inconveniences associated with proximity to airport operations. All new residential projects located within the overflight area shall be required to record a notice informing of the potential environmental impacts related to the aircraft, and that the property is subject to overflight, sight and sound of aircraft operating from the McClellan-Palomar Airport.

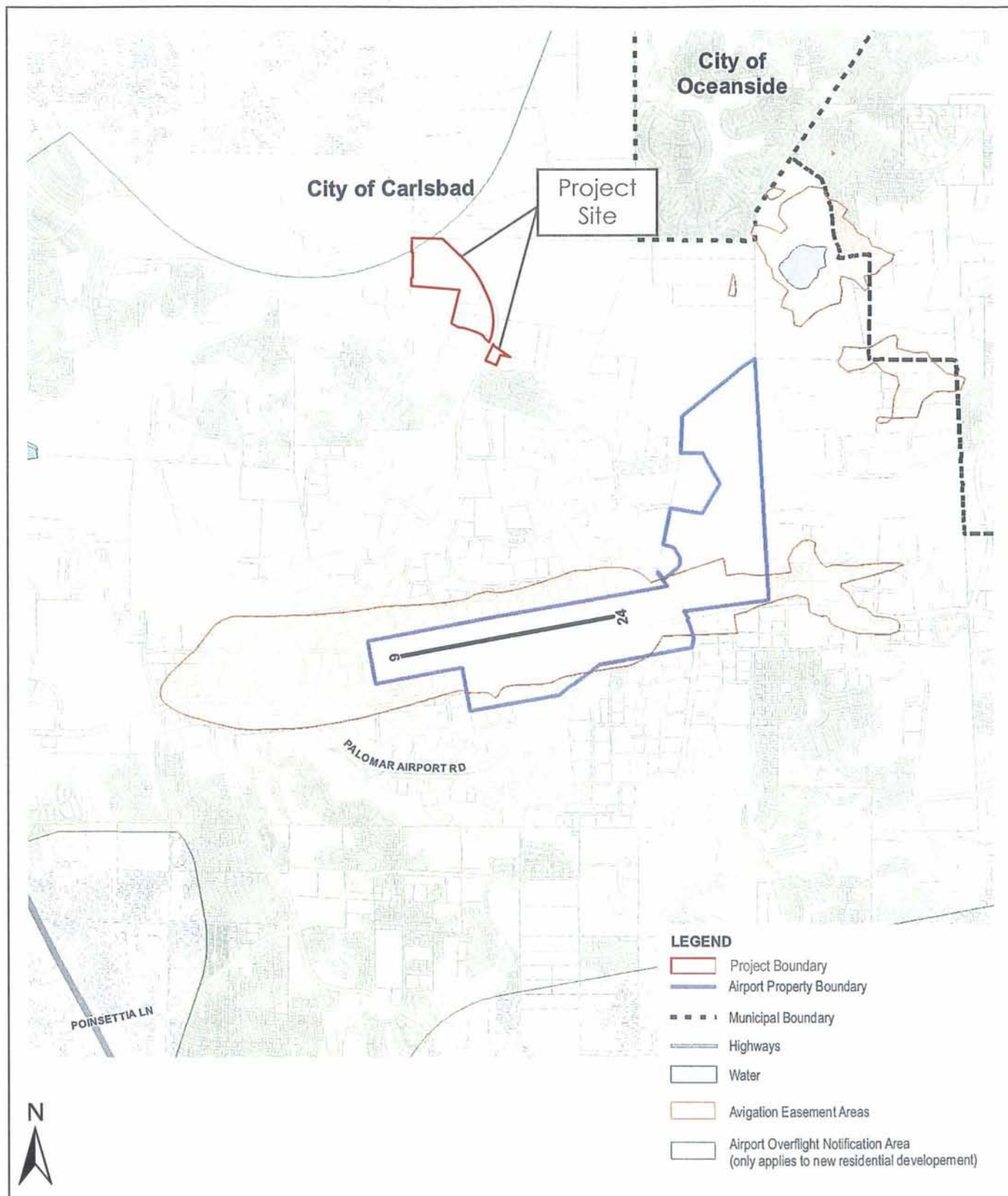
Ambient noise measurements were taken at four locations on the CCRC site (northwest, northeast, central, and southern portions) and at the south end of the affordable housing site near Sunny Creek Road. Figure 5.5-3 depicts the locations where noise monitoring measurements were recorded.



Dos Colinas EIR

McClellan-Palomar ALUCP
Compatibility Policy Map: Noise

FIGURE
5.5-1



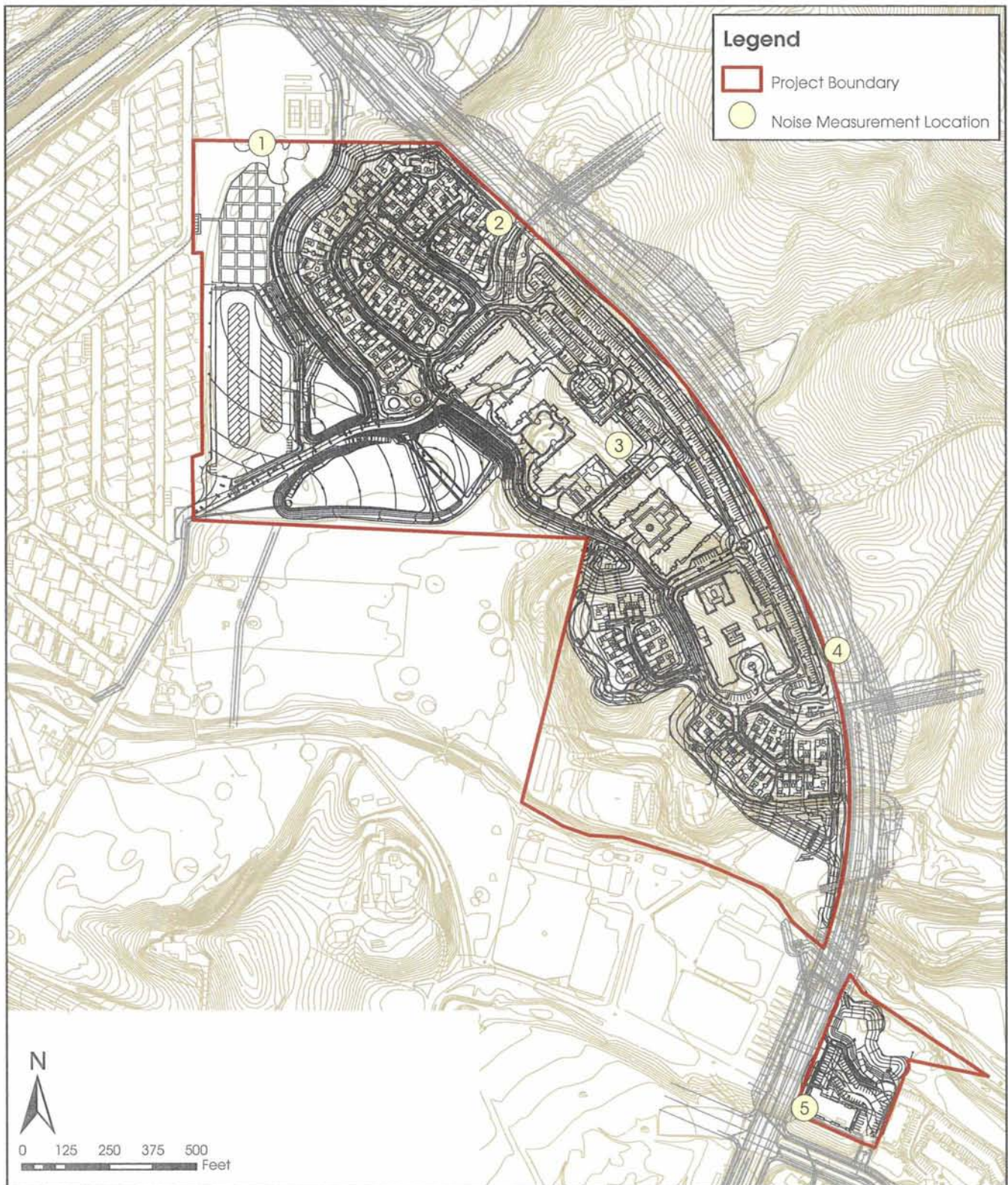
SOURCE: Ricondo & Associates, Inc., 2009

4/29/10



Dos Colinas EIR
McClellan-Palomar ALUCP
Avigation Easement and
Overflight Notification Areas

FIGURE
5.5-2



SOURCE: Dudek, 2010; BRG Consulting, Inc., 2010

8/2/10



Dos Collinas EIR

Noise Measurement Locations

FIGURE
5.5-3

F:\projects\1970 Dos Collinas\2nd Screencheck EIR\Chapter 5\Section 5\Figure 5.5-3 Noise Measurement Locations.mxd

Table 5.5-1 shows the approximate ambient daytime Leq noise level at the monitored locations, as well as the maximum and minimum noise levels during the noise measurements. A detailed description of noise level measuring methodology can be found in the Acoustical Site Assessment (Appendix D on the attached CD of Technical Appendices found on the back cover of this EIR).

TABLE 5.5-1
Existing Ambient Noise Levels

Receptor Number	Location	Leq ¹	Lmax ²	Lmin ³
1	Northwest portion of CCRC site	46	55	39
2	Northeast portion of CCRC site	43	53	34
3	Central portion of CCRC site	41	52	33
4	Southern portion of CCRC site	39	50	32
5	South end of affordable housing site (located near Sunny Creek Road)	52	63	43

Note: Leq=equivalent sound level.

Source: Dudek, 2010

Audible noise sources during the measurements included distant background traffic, distant aircraft and bird chirps. The average sound level measured at the noise monitoring locations range from 39 to 52 dB. The south end of the affordable housing site (Receptor No. 5) was measured to have the highest ambient daytime Leq noise level of 52, while the southern portion of the CCRC site (Receptor No. 4) was measured to have the lowest ambient daytime Leq noise level of 39.

5.5.1.4 Sensitive Receptors

According to the City's Noise Guidelines Manual, noise sensitive land uses can be either residential or non-residential. Generally, the typical noise sensitive land uses to be analyzed would be those utilized for living or dwelling units. The following land uses are considered to be noise sensitive in the City of Carlsbad: single family residential use or multi-family residential uses. Other noise sensitive land uses may include, but are not limited to: hotels, motels, hospitals, board and care facilities, convalescent facilities, nursing or rest homes, boarding schools, convents, churches, and emergency services living quarters.

Offsite

Currently, sensitive receptors offsite include Rancho Carlsbad Estates which is located immediately west of the proposed RV storage and garden site and the single and multi-family development located to the south and east of the affordable housing site, respectively. Rancho Carlsbad Estates is a 55-years and older retirement community, which includes a golf course and other recreational facilities. Although not currently existing offsite, a future high school is proposed on property owned by Carlsbad Unified School District located north of the CCRC site. Schools are considered to be sensitive receptors.

Onsite

There are currently no noise sensitive uses on the project site. In the proposed condition (under the proposed project), the CCRC site will consist of independent and assisted living units for the elderly, which would also include medical and recreational uses. These uses would be considered sensitive receptors. Noise generating activities onsite include community activity areas and the amphitheatre associated with the proposed park and courtyard areas. Three small parks are proposed to be located at the North Cottages area. Two of the parks would generally consist of small seating areas and flower gardens. The third park would be located just west of Independent Living Building 3, and would include a children's play area, picnic tables and a non-amplified amphitheatre with a maximum capacity of 50 people. The closest resident would be located approximately 35 feet from the center of the amphitheatre. The picnic area and children's area would be located approximately 65 to 80 feet, respectively from the closest resident.

In addition, a total of four recreation courtyards are proposed in between each of the wings of the independent living buildings. The courtyards would be available for use by the independent living and cottage residents. Amenities such as putting greens, a koi pond, bocce ball, a swimming pool and spa, picnic areas, as well as a greenhouse gardening center will be provided. A total of three small courtyards are proposed for the assisted living units. The courtyards will only be available for use by those residing in the assisted living building and will not be accessible from the exterior perimeter of the building. The only cottage residents potentially exposed to the recreation noise would be located southwest of Independent Living Building 2. The closest residence would be located approximately 150 feet from the courtyard area.

5.5.1.5 Vibration

There are no City or state standards for vibration impacts. The professional standard has been that construction vibrations pose no threat to buildings and structures due to the short-term nature of the vibrations from project activities (CALTRANS 2002). Caltrans and the U.S. Department of Transportation Federal Transit Administration (FTA) recommend a 0.2 inches per second (in/sec) peak particle velocity level for assessment of vibrations. This is the level that would annoy people in buildings, and where there would be a risk of architectural damage.

5.5.2 Thresholds For Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant noise impact from the proposed project. For the purpose of this EIR, a significant impact would occur if implementation of the proposed project would:

- *Generate noise levels above the established City noise standards for the proposed uses or if proposed land uses are subjected to noise levels exceeding City standards established in the Noise Element of the City of Carlsbad General Plan and the City of Carlsbad Noise Guidelines Manual:*
 - Residential
 - Exterior – 60 dBA or less
 - Interior – 45 dBA or less
- *Increase noise levels by 3 dBA in areas that already exceed City or State standards;*

- *Produce a substantial permanent, temporary or periodic increase in ambient noise levels in the project vicinity above noise levels existing without the project;*
- *Expose people residing or working within an airport land use plan or within two miles of a public airport or public use airport to excessive noise levels; or,*
- *Expose people to the generation of groundborne vibration or groundborne noise levels in excess of 0.2 in/sec ppv.*

5.5.3 Environmental Impact

5.5.3.1 Construction Noise

Construction of the proposed project will generate short-term noise from construction equipment, such as tractors/backhoes, dozers, loaders, scrapers, graders, off-highway water trucks, forklifts, and other miscellaneous construction vehicles. As depicted in Table 5.5-2, anticipated noise levels from construction equipment includes only standard equipment that would be employed for any routine construction project of the proposed project. Construction equipment with substantially higher noise generation characteristics (such as pile drivers, rock drills, blasting equipment, etc.) are not anticipated for development of the proposed project. Maximum construction noise levels at 50 feet would typically range from approximately 75 to 85 dBA for the type of equipment anticipated to be used for construction.

The closest existing residences to the construction area for the RV storage lot are the Rancho Carlsbad Estates, located approximately 25 or more feet from the western property boundary of the RV storage lot. These residences could be exposed to construction noise levels identified in Table 5.5-2.

Based on the construction equipment and distance to the closest residences, the construction noise is anticipated to generate maximum noise levels of up to approximately 90 dBA at the adjacent residences. The noise level could intermittently occur for a few days when construction equipment is operating immediately adjacent to the residential properties. The remainder of the time, the construction noise level would be much less because the equipment would be working at a greater distance from the existing residences. As such, the existing residences could be disturbed when construction equipment is operating.

An existing multi-family development (i.e. apartment complex) is also located approximately 10 feet from the eastern property line of the affordable housing site. The maximum noise level is anticipated to range up to approximately 90 dBA when the equipment is operating directly across the apartment complex. This noise level could intermittently occur for a few days when construction equipment is operating immediately adjacent to the residential property. The remainder of the time, the construction noise level would be less because the equipment would be working in a wide area farther away from the existing multi-family development. In addition, there are single-family residences located south of the affordable housing site across Sunny Creek Road. These residences would be located approximately 100 or more feet from the construction activities. At this distance, the maximum noise level is anticipated to range up to approximately 80 dBA when the equipment is operating directly across the homes.

TABLE 5.5-2
Construction Equipment Noise Levels

Equipment	Typical Sound Level (dB) 50 feet from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Paver	89
Pile-driver (Impact)	101
Pile-driver (Sonic)	96
Pneumatic Tool	85
Pump	76
Rail Saw	90
Rock Drill	98
Roller	74
Saw	76
Scraper	89
Truck	88

Source: Federal Transit Administration, May 2006, *Traffic Noise and Vibration Assessment*.

Construction activities associated with development of the project has the potential to adversely affect adjacent noise-sensitive uses. Therefore, noise generated during activities is considered a significant impact. Implementation of Mitigation Measure N-1 will reduce this impact to a level less than significant.

5.5.3.2 Ground Vibration

Construction operations may generate varying degrees of ground vibration, depending on the construction procedures and the construction equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site would vary, depending on soil type, ground strata, and receptor building construction. Ground vibration levels associated with various types of construction equipment are summarized in Table 5.5-3. Table 5.5-4 presents the vibration level thresholds for architectural and structural damage and human perception thresholds. As stated above, Caltrans and FTA recommend a 0.2 in/sec level for assessment of impact.

TABLE 5.5-3
Representative Vibration Source Levels
for Typical Construction Equipment

Equipment	ppv at 25 feet (in/sec)
Large Bulldozer	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer	0.003

Notes: in/sec=inches per second; pv=peak particle velocity

Source: FTA, 1995.

TABLE 5.5-4
Reaction of People and Damage to Buildings at
Various Continuous¹ Vibration Levels

Effects on Structures	Effects on People	Vibration Level (in/sec ppv)
Architectural damage and possibly minor structural damage	Considered unpleasant	0.4-0.6
Threshold of risk of architectural damage to normal dwelling with plastered walls and ceilings	Annoying to people in buildings	0.2
Virtually no risk of damage	Threshold of annoyance	0.1
Recommend upper level for ruins and ancient monuments	Vibrations readily perceptible	0.08
Unlikely to cause damage of any type	Threshold of perception; possibility of intrusion	0.006-0.019

Notes: ¹=Caltrans considers most construction vibrations, with the exception of pile driving and blasting, to be continuous; in/sec=inches per second; ppv=peak particle velocity

Source: Caltrans, 2002.

Ground vibrations from construction activities rarely reach levels that can damage structures, but they can achieve audible and perceptible ranges in buildings close to the construction site (i.e., Rancho Carlsbad Estates and multifamily development located east of the affordable housing site). However, as identified in Table 5.5-3, the vibration levels of the construction equipment that will be used for the proposed project will not expose people to the generation of groundborne vibration or groundborne noise levels in excess of 0.2 in/sec ppv. Also, the proposed grading will not involve any rock blasting or rock crushing. Therefore, vibration impacts from construction activity is considered less than significant.

The proposed project consists of residential uses. These land uses typically do not involve vibration intensive activities. Future project operations are not expected to generate perceptible ground vibration at the nearest residential uses. Therefore, vibration impacts from stationary sources would be less than significant.

5.5.3.3 *Noise/Biological Resources*

Please refer to Section 5.5 - Biological Resources of this EIR for a discussion related to potential indirect noise impacts on biological resources.

5.5.3.4 *Delivery Truck Noise*

As part of the project, a total of three loading zone/delivery areas would be constructed and would operate on the east side of the assisted living/Alzheimer building and between Independent Living Buildings 1 and 2. The loading zones would be used to deliver goods and it is anticipated that between two to five deliveries would occur throughout the day, each weekday using vans and medium sized trucks. The closest assisted living dwelling units to the delivery areas would be located at Independent Living Building 1. These dwelling units would be located one and two floor levels above the delivery area and would have windows and/or balcony doors facing the delivery/loading area. The exterior noise level associated with the delivery activities would be approximately 57 CNEL at the closest dwelling units within Independent Living Building 1. The building façade would reduce the delivery noise by at least 20 dB resulting in an interior noise level of up to approximately 37 CNEL. At the Independent Living Building 2, the loading area would be approximately 50 feet or more from the closest dwelling units. These units would not have any windows or doors facing the loading area. The interior noise level associated with the delivery/loading activities would be less than 30 CNEL at these units. Therefore, the impact associated with the loading zone/delivery areas at the Independent Living Building dwelling units would be less than significant.

Additionally, dwelling units would be located on the first and second floor levels adjacent to the Assisted Living/Alzheimer's Building loading area. The delivery/loading zone at the Assisted Living/Alzheimer's Building would only be used for outside delivery/loading during the times that a resident is moving into, or out of, the building. The delivery/loading zone would primarily be used by on-site staff for such things as garbage pickup, food delivery, and delivery and pick up of laundry. Golf carts would be used for these activities. The exterior CNEL at this location would be substantially less than the other loading areas (by at least 10 dB CNEL). With the building façade providing at least a 20 dB reduction in noise from the delivery/loading area, the interior noise level would be less than 30 CNEL at the Assisted Living/Alzheimer Building's dwelling units; therefore, the impact associated with the loading zone/delivery area at the Assisted Living/Alzheimer Building dwelling units would be less than significant.

The assisted living/Alzheimer building would shield the closest cottage residences located to the west and south of the loading area from noise associated with delivery activities. Future residences may also be located east of the site. These residences would be located at least 240 feet away and on the east side of College Boulevard. At this distance, the hourly average noise level from the loading zone area would range up to approximately 44 dBA. Therefore, noise generated by delivery trucks at these receptors would be less than significant.

Similar to the loading area at the assisted living/Alzheimer building, Independent Living Buildings 1 and 2 would shield the closest cottage residences located approximately 360 feet south of the loading area from the noise associated with the delivery activities. The future single-family residences anticipated to be constructed to the east (i.e. Cantarini Ranch) would be located at least 320 or more feet away on the east

side of College Boulevard. At this distance, the hourly average noise level from the loading zone area would range up to approximately 40 dBA. Therefore, noise generated by delivery trucks at these receptors would be less than significant.

5.5.3.5 *Recreation Noise Impacts*

Three small parks are proposed to be located at the North Cottages area. Two of the parks would generally consist of small seating areas and flower gardens. The third park would be located just west of Independent Living Building 3, and would include a children's play area, picnic tables and a non-amplified amphitheatre with a maximum capacity of 50 people. Based on noise measurements conducted by Dudek for small non-amplified events, the average noise levels vary from approximately 50 to 55 dB at a distance of 100 feet from the amphitheatre.

The closest cottage resident would be located approximately 35 feet from the center of the amphitheatre. The picnic area and children's area would be located approximately 65 to 80 feet, respectively from the closest resident. At this distance, the outdoor activities would generate a one-hour average sound level of up to approximately 60 to 65 dB at the adjacent cottage residence. The noise would result in a less than significant noise impact at the adjacent residences during the daytime and evening hours. These noise levels would comply with the City's Noise Element criteria; however, these activities could be considered a nuisance to some residents during the nighttime hours. Therefore, the park amphitheatre, picnic area, and children's play area would not be used between the hours of 10:00 p.m. and 7:00 a.m. Implementation of Mitigation Measure N-2 will avoid a significant noise impact to adjacent residences associated with the proposed amphitheatre.

In addition, a total of four recreation courtyards are proposed in between each of the wings of the independent living buildings. The courtyards would be available for use by the independent living and cottage residents. Amenities such as putting greens, a koi pond, bocce ball, a swimming pool and spa, picnic areas, as well as a greenhouse gardening center will be provided. A total of three courtyards are proposed for the assisted living units. The courtyards will only be available for use by those residing in the assisted living building and will not be accessible from the exterior perimeter of the building. The only cottage residents potentially exposed to the recreation noise would be located southwest of Independent Living Building 2. The closest residence would be located approximately 150 feet from the courtyard area. The proposed recreational areas would serve older adults and are not for highly active recreational uses. At this distance, it is anticipated that the average noise level from the courtyard area activities would be approximately 50 dB. The building façade would attenuate noise from exterior sources by at least 20 dB, therefore, the interior noise would be approximately 30 dB CNEL which is lower than the 45 dB CNEL interior noise standard. Therefore, this noise level would result in a less than significant noise impact.

5.5.3.6 *On-Site Traffic/Exterior Noise Impacts*

The City of Carlsbad has established a maximum threshold of 60 dB for exterior noise for residential uses. As College Boulevard is designated as a Major Arterial Road in the City's Circulation Element, the primary exterior noise source associated with the proposed project will be from traffic along College Boulevard.

The western cluster of cottages would be exposed to a future noise level of 60 dB CNEL or less due to the proposed setback distance, and/or topographic shielding associated with the grade elevation difference between the homes and College Boulevard. The Independent Living buildings, which will be approximately 35 feet in height, will act as a solid barrier to shield noise from College Boulevard.

The ground floor noise level of the assisted/independent living buildings adjacent to College Boulevard would range up to 71 dB CNEL. The noise level would exceed the City's noise guidelines by up to 11 dB, and would result in a significant noise impact if not mitigated. In addition, the backyards of the homes located adjacent to College Boulevard at the north and south cluster of cottages, independent living buildings, assisted living/Alzheimer's facility and the affordable unit multi-family building would be exposed to noise levels greater than 60 dB CNEL. This is considered a significant impact. With implementation of Mitigation Measure N-3, this impact will be reduced to a level less than significant.

The tentative map for the project depicts sound walls and combination berm/sound walls ranging from 6 to 11-feet in height along the College Boulevard frontage. The maximum height of the masonry wall is not anticipated to exceed six feet. As shown in Table 5.5-5, the combination berm/sound wall would mitigate the exterior noise level to 60 dB CNEL or less at the ground floor level of any of the proposed habitable structures on the project site. Therefore, the on-site traffic noise impact is considered less than significant. In addition, as demonstrated in Table 5.5-5, Independent Living Building 2 (3rd Floor), Independent Living Building 3 (3rd Floor), Assisted Living/Alzheimer (2nd Floor), and Multifamily Building (2nd Floor) exceed the 60 dB CNEL threshold for exterior noise. However, this threshold does not apply to 2nd and 3rd floor of buildings. As such, no significant noise impact is identified for the buildings containing 2nd and 3rd floors exceeding the 60 CNEL threshold.

5.5.3.7 Interior Noise Impact at Proposed Cottages, IL/AL Buildings and Affordable Housing Building

The City of Carlsbad has established a maximum threshold of 45 dB for interior noise for residential land uses. Typically, with the windows open, and using standard California construction materials and methods, the building shells provide approximately 15 dB of noise reduction. Therefore, residential uses exposed to an exterior CNEL greater than 60 dB could result in an interior CNEL greater than 45 dB. As discussed in Section 5.5.3.6, with the proposed combination berm/soundwalls, as well as intervening structures, ground level exterior noise significance thresholds (60 dB CNEL) would not be exceeded for any of the habitable buildings; therefore, the ground level interior noise significance threshold (45 dB CNEL) levels would also be met because the building façade would provide a minimum of a 20 dB reduction of noise from the exterior source. However, exterior noise levels would range from 65 to 68 dB CNEL at the upper floors of the independent living buildings and assisted living/Alzheimer's buildings. In addition, the exterior noise level for the upper floors of the affordable housing development would range up to 71 dB CNEL. Thus, the interior noise levels in each of these buildings is anticipated to be greater than 45 dB. In order to reduce this impact to a level less than significant, an interior acoustical analyses would be required to specify the building equipment and/or architectural features (e.g., sound rated windows) necessary in order to achieve the interior noise standard. Implementation of Mitigation Measure N-4 will reduce this impact to a level less than significant.

TABLE 5.5-5
Future Exterior Noise Level

Receptor	Future Noise Level (CNEL) with sound walls and berms
North Cottage 5	58
North Cottage 6	58
North Cottage 7	60
North Cottage 22	59
North Cottage 23	60
South Cottage 3	60
South Cottage 4	60
South Cottage 5	58
South Cottage 6	60
South Cottage 8	60
Independent Living Building 1	59
Independent Living Building 2	60
Independent Living Building 3	60
Independent Living Building 1 (3 rd Floor)	60
Independent Living Building 2 (3 rd Floor)	64 ¹
Independent Living Building 3 (3 rd Floor)	62 ¹
Assisted Living/Alzheimer (2 nd Floor)	67 ¹
Multifamily Building	60
Multifamily Building (2 nd Floor)	71 ¹

Note: 1= Exterior noise exceeding 60 CNEL is considered a significant impact. However, this exterior noise threshold does not apply to 2nd and 3rd floors of buildings exceeding 60 CNEL.

Source: Dudek, 2010.

A single-story design is proposed for each cluster of cottages. With implementation of the sound walls adjacent to the north and south cluster of cottages, the exterior noise level would be 60 dB CNEL or less; thus, the interior noise level is also anticipated to be less than 45 dB. Figure 5.5-4 depicts the sound wall heights and locations at the CCRC site. Therefore, with implementation of Mitigation Measure N-3, these homes would not require an interior noise study.

5.5.3.8 Off-Site Traffic Noise Impact

The project would generate traffic along several existing roads in the area including El Camino Real, Cannon Road and College Boulevard. Project-generated traffic would result in a 0 dB CNEL increase along the existing nearby roads, due to the project's small percentage contribution of traffic as compared to the overall traffic volumes for the roadways. Because the project would not generate an increase in traffic generated noise levels above the 3 dB threshold, or generate noise levels above the established City noise standards, the traffic noise impact associated with the project is less than significant. The existing plus project noise level change is depicted in Table 5.5-6. It is assumed that the College Boulevard extension between El Camino Real and Cannon Road would be built by the existing with project, and year 2020 traffic scenarios.

TABLE 5.5-6
Off-Site Traffic Noise Level Increase

Street (Segment)	Existing ADT	Existing with Project ADT	CNEL Increase¹ (dB)	Year 2020 with Project ADT	CNEL Increase² (dB)	CNEL Increase³ (dB)
El Camino Real						
Tamarack Ave. to Cannon Rd.	24,680	24,940	0	36,460	2	0
Cannon Rd to College Blvd.	30,790	21,120	-2	35,000	1	0
College Blvd. to Faraday Ave.	25,250	25,670	0	38,120	2	0
Palomar Airport Rd. to Camino Vida Roble	27,270	27,390	0	36,120	1	0
Cannon Road						
Faraday Ave. to El Camino Real	11,430	11,570	0	14,940	1	0
El Camino Real to College Blvd.	16,790	6,720	-4	12,000	-1	0
College Boulevard						
Faraday Ave. to El Camino Real	8,290	8,510	0	17,920	3	0

Notes: 1 Existing vs. existing plus project noise increase
 2 Existing vs. year 2020 with project
 3 Project contribution to year 2020
 Sound levels are rounded to the nearest whole dB.

Source: Dudek, 2010.

The year 2020 traffic noise would increase by up to 3 dB CNEL along College Boulevard as shown in Table 5.5-6. A noise level change of 3 dB CNEL is generally considered to be a just perceptible change in environmental noise. There are no existing noise sensitive receptors along College Boulevard between Faraday Avenue and El Camino Real. The future year 2020 traffic noise level increase would be less than significant. In addition, the project's contribution to the near-term cumulative noise level increase would be 0 dB CNEL along the existing roads. Because the project in the future year 2020 condition would not generate an increase in traffic generated noise levels above the 3 dB threshold, or generate noise levels above the established City noise standards, the traffic noise impact associated with the project is less than significant.

5.5.3.9 Heating Ventilation and Air Conditioning Equipment

Heating, ventilation and air conditioning (HVAC) equipment would be mounted on the roofs of the three independent living buildings and the assisted living/Alzheimer's building. HVAC units typically generate noise levels of approximately 45 to 55 dB at a distance of 50 feet. The future cottages would be located approximately 80 feet or more from the independent living and assisted living/Alzheimer's buildings. At this distance the noise level would range up to approximately 42 to 52 dB. However, all units would be screened from the adjacent residents by the buildings roof parapets or individual screens around the units. This would provide a minimum of 5 dB attenuation. Thus, the resulting noise level would range from approximately 37 to 47 dB. This noise level is below the 60 dB exterior noise threshold and would result in a less than significant impact. However, because the actual HVAC units and number of units and roof plans are not available at this time, the noise impact is considered significant. Implementation of Mitigation

Measure N-5 will reduce the impact associated with mechanical equipment noise to a level less than significant.

Air conditioning equipment is not proposed for the affordable housing building or cottages at the CCRC site. At the affordable housing building, a mechanical ventilation system is proposed rather than an air conditioning system. Thus, no mechanical equipment noise impact would result.

5.5.3.10 *McClellan-Palomar Airport*

Pursuant to Exhibit III-1 of the McClellan-Palomar Airport Land Use Compatibility Plan, the project site is not located within the "Noise Exposure Range." However, pursuant to Exhibit III-6 of the Plan, the project is located within the McClellan-Palomar Airport Overflight Notification Area. Residential properties in an overflight notification area may be subject to some of the annoyances or inconveniences associated with proximity to airport operations. All new residential projects located within the overflight notification area shall be required to record a notice informing of the potential environmental impacts related to the aircraft, and the property is subject to overflight, sight and sound of aircraft operating from the McClellan-Palomar Airport. Implementation of Mitigation Measures N-6 and N-7 will reduce the impact associated with intermittent airport noise to a level less than significant.

5.5.4 Mitigation Measures

N-1 Prior to Grading Permit issuance for Phase I and Phase II, the Applicant shall ensure that:

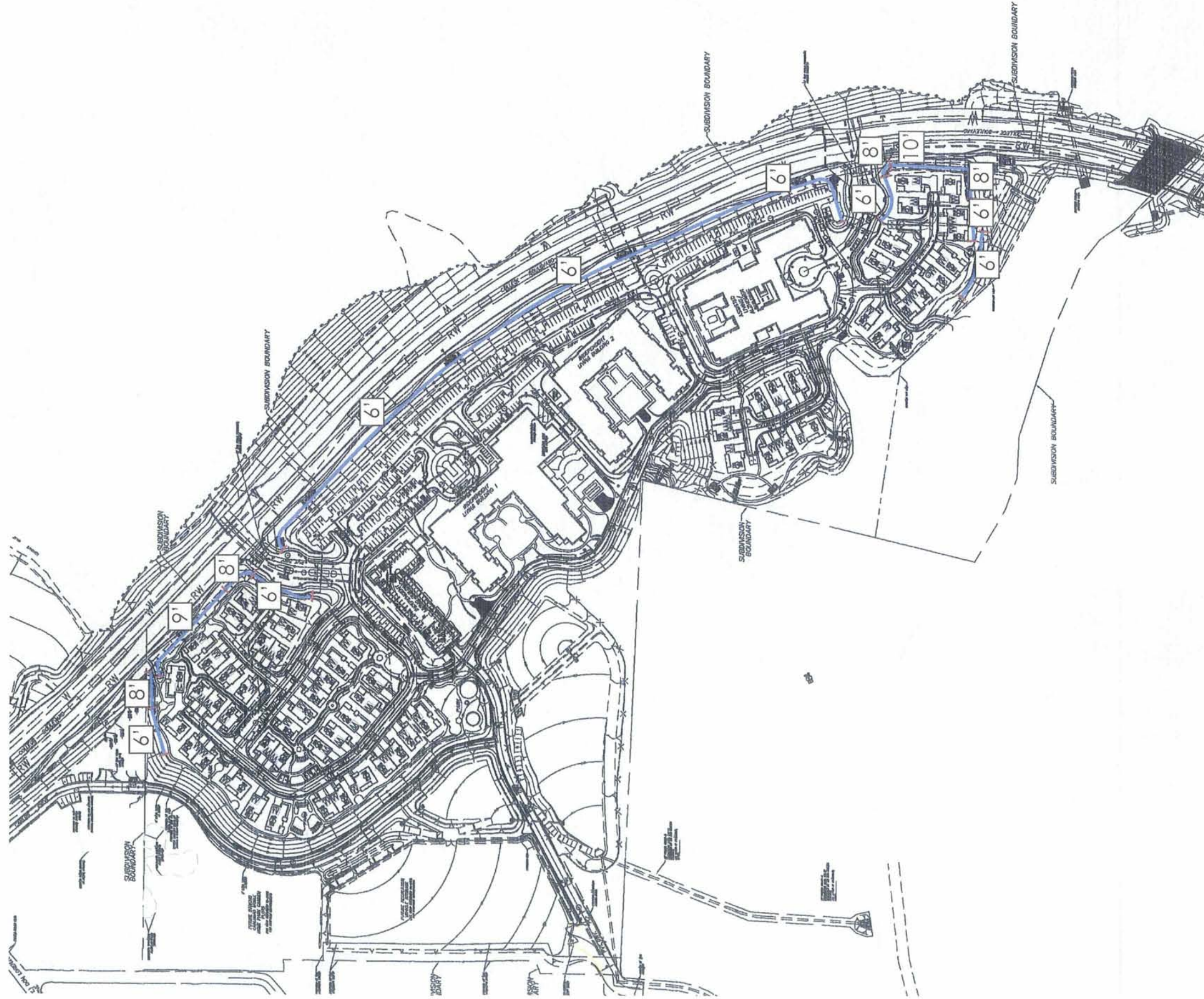
- All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers.
- Construction noise reduction methods such as shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from or shielded from sensitive noise receivers.
- During construction, stockpiling and vehicle staging areas shall be located as far as practical from noise sensitive receptors.
- The project shall be in compliance with the City's Municipal Code such that grading activities are limited to the hours of 7:00 a.m. to sunset, Monday through Friday, and between 8:00 a.m. and sunset on Saturday.

N-2 The park amphitheatre, picnic area, recreation areas for the IL buildings, and children's play area shall not be used between the hours of 10:00 p.m. and 7:00 a.m. This restriction shall be included as a Conditional to the CCRC facility's conditional use permit.

- N-3** Prior to the development of Phase II, six to eleven-foot high noise barriers shall be constructed to mitigate noise impacts adjacent to College Boulevard. The noise barrier heights at the CCRC site are depicted on Figure 5.5-4. Figure 5.5-5 depicts the noise barrier heights at the affordable housing site. The noise barriers may be constructed as a wall, berm, or combination of both; however, the overall height of the masonry wall shall not exceed six feet. The noise barriers must have a surface density of at least 3.5 pounds per square foot, and have no openings or cracks. The wall may be constructed of 5/8 inch Plexiglas, any masonry material, or a combination of these materials.
- N-4** Prior to the issuance of building permits for the development of Phase II, an interior noise study will be required for the three independent living buildings, the assisted living/Alzheimer's building, and the affordable multi-family building to ensure that the interior CNEL would not exceed 45 dB. Any additional measures identified by the acoustical analysis that are necessary to achieve in interior standard of 45 dB CNEL shall be incorporated into the building/architectural plans. The buildings will require air-conditioning and/or mechanical ventilation and possibly sound-rated windows to mitigate the interior noise impact.
- N-5** Prior to finalizing the mechanical equipment plans for the independent living buildings and the assisted living/Alzheimer's building of Phase II, the plans shall be evaluated to ensure that outdoor mechanical equipment noise would at a minimum not exceed 60 dB CNEL at the proposed adjacent cottage residences.
- N-6** New residents within the McClellan-Palomar Airport Overflight Notification Area as defined by the ALUCP shall be notified as part of the real estate disclosure package that the project area is outside the 60 db(A) CNEL airport noise impact area, but still subject to intermittent single-event noise impacts, sight and sound of aircraft operating from McClellan-Palomar Airport. The state statute dictates that the following statement shall be provided:

NOTICE OF AIRPORT IN VICINITY: This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

This measure shall be implemented concurrent with the real estate disclosure package. Prior to issuance of building permits for Phase II and the affordable housing development, the City of Carlsbad Planning Department shall be responsible for verification of implementation of this measure through the recordation of a Notice.



SOURCE: Hunsake & Associates, 2010

Dos Colinas EIR

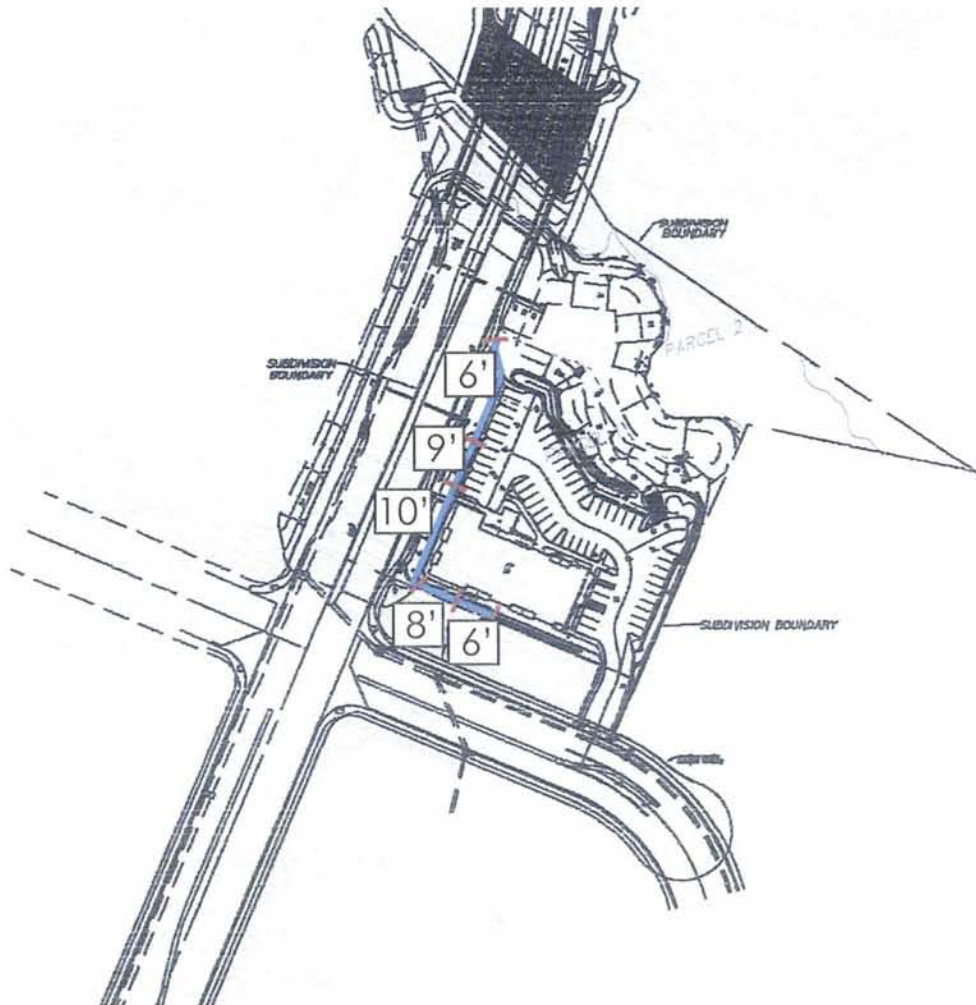
FIGURE

Noise Barrier Heights and Locations at CCRC Site

5.5-4



4/29/10



SOURCE: Hunsaker & Associates, 2010

4/29/10



Dos Colinas EIR

Noise Barrier Heights and Locations at Affordable Housing Site

FIGURE
5.5-5

- N-7** Prior to recordation of the final map for Phase II and the final map for the affordable housing development, an overflight notification document shall be recorded for any local agency approval or new residential land use development within the overflight notification area. The document shall inform property owners that the property is subject to aircraft overflight, aircraft noise exposure, and other airport-related impacts. The City of Carlsbad Planning Department shall be responsible for verification of implementation of this measure through the recordation of a Notice ("Noise Form No. 2").

5.5.5 Impact After Mitigation

Implementation of Mitigation Measure N-1 will reduce the potential impact associated with construction noise to below a level less than significant. Implementation of Mitigation Measures N-2 and N-3 will reduce the potential noise impact associated with exterior noise to below a level less than significant. Implementation of Mitigation Measure N-4 will reduce the potential impact associated with interior noise to below a level less than significant. Implementation of Mitigation Measure N-5 will reduce the impact associated with mechanical equipment noise to a level less than significant. Implementation of Mitigation Measures N-6 and N-7 will reduce the potential noise impact associated with intermittent single-event aircraft overflight to a level less than significant.